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ABSTRACT

The way students progress from high school to college is in need of change. This paper examines five programs for student pathways and determines which have enough promise to merit consideration by policymakers. "High Schools That Work" prepares students for college by requiring them to take a minimum core of courses. "Tech Prep" includes formal articulation strategies, engaged learning, and other strategies. "Career Academies" are learning communities within high schools that prepare students for both college and career. "Middle-College High Schools" are schools on a college campus that serve at-risk students. "Dual-Credit Programs" discusses the opportunity for high school juniors or seniors who have completed most of their required courses to enroll in college-level courses. Based on the merits of the programs, this paper recommends the following: (1) Adopt a blended program of Career Academies, Tech Prep, and dual-credit programs; (2) create middle-college high school programs for at-risk students; (3) enact and fund programs that support creative, collaborative solutions at the local level; and (4) create a pathways commission in each state to provide leadership on strategies and to monitor policies for improving the connectivity between high schools and colleges. (Contains a short glossary and 19 references.) (WFA)

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Education Commission of the States

Student Pathways Through High School to College

By David R. Pierce

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Preschool Through Postsecondary

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The school-college connection becomes a national preoccupation roughly every 30 years. The underlying concerns are unchanging – low student achievement, poor teaching, lax discipline, weak standards and overlaps, gaps and inadequacies in curricula. The simple fact is that there is a yawning gap between grade 12 and grade 13.

— Arthur Levine

Higher education has important work to do, too. For starters, that work needs to include coming to cross-institutional agreement on the knowledge and skills necessary for students to begin credit-bearing work – and how to assess that.

— National Commission on the High School Senior Year

Adolescents are growing up faster these days than young people of earlier generations and high schools have become outmoded holding pens for today's youth.

— Leon Botstein

It is increasingly clear that the last two years of high school – and their connectivity with the first year of college – are in serious need of fresh thinking. While some students are able to navigate through this period in good shape, for many it is a period of frustration and wasted time. The purpose of this paper is to examine some reform programs designed to address this issue and to determine which have enough promise to merit special consideration by public policymakers.

Background

Student pathways through high school to college have been marked by various rough spots for many years, particularly for students who aren't sure early in their high school years whether they intend to go on to college. Perhaps there has never been a time when student movement through high school to college was completely smooth, but as education has become more important to society and the economy, the pathways available to students have become the focus of increasing attention and discussion.[1]

An important catalyst for this attention was the release in 1983 of *A Nation At Risk*, which sounded the alarm that all was not well with the nation's schools and that serious reform was in order.[2] Since that time, there have been many initiatives undertaken in an attempt to make K-12 schools more effective and improve learning for all students. More recently, the issue of how best to prepare students for college and the efficacy of the paths they take has become a reform topic of great interest and concern.[3]

Over the past two decades, the higher education system has remained largely disconnected from the K-12 reform movement, except for a few programs (dual-credit programs, tech-prep and various school-to-work initiatives) in which universities and/or community colleges have worked collaboratively with K-12 schools and districts.

Interestingly, this "disconnect" between K-12 schools and postsecondary institutions was not always the case. For example, when the nation's first community college, in Joliet, Illinois, opened in 1901, it was operated as a unit of the Joliet School District, with the district superintendent serving as the new institution's CEO during its early years.[4] This approach to governance continued as the predominant structure for "junior colleges" until after World War II. By 1970, the formal bonds between school districts and community colleges had all but disappeared, and most community colleges were governed by their own board or by a system/state board. In contrast, high schools started after both elementary schools and universities and received a lukewarm reception. Nevertheless, for the first part of the 20th century, they competed for the same students.[5]

Today, there is a growing consensus that for some students, the junior and senior years in high school are poorly used. This is particularly true for students who have a clear goal to attend college upon graduation from high school. These students typically take a carefully planned curriculum and complete their requirements both for graduation from high school and entrance to college during or by the end of

their junior year. At that point, many students coast during their senior year rather than take courses that require a high level of effort.

Another problem has to do with vocational education, now commonly referred to as Career and Technical Education (CTE), which has been part of the high school curriculum since the 1920s and has played an important role in preparing students for jobs. In recent years, CTE has come under criticism for not being able to prepare students for today's jobs or for not being able to document that it can do so. In the opinion of some, CTE programs at the secondary level should emphasize career exploration and articulated technical-education programs, as well as do a better job of equipping CTE students, who may decide to enroll in college with the skills and knowledge they need to succeed in college.

Still another part of the problem is finding the best solution for students enrolled in the General Studies curriculum. In many high schools, these students constitute the largest group and yet their needs go largely unmet. Such students often lack direction and motivation and aren't sure whether they want to pursue a higher education goal or enter the job market.

Finally, there is the lack of applied-baccalaureate programs available for students who leave high school wanting to prepare for entry into higher-level technical positions. There are two issues involved: the meaning of "collegiate level" and the needs of the new economy for the applied baccalaureate degree. There is no universal agreement on the meaning of the phrase "collegiate level" and yet it is used routinely as if there was.[6] Due to this lack of clarity, many universities avoid developing baccalaureate curriculums that might leave any question about being considered "collegiate level." The scarcity of such programs does a disservice to both the economy and its workforce needs and to students interested in pursuing technical careers. (It should be noted that in recent years, community colleges have begun to respond to these new demands by offering a range of applied-baccalaureate programs.)

New Pathways: A Look at Some of the Options

Clearly, it is time for the K-12 and postsecondary education systems to begin to work together more effectively to create smoother transitions for students. What follows is an examination of some of the various programs that are available now for students to use in moving through high school to college, and identifies which of them appear to work well enough to deserve stronger attention by public policymakers.

School-to-Career Initiatives

The School-to-Work Opportunities Act, which was approved by Congress in 1994, was designed to change the way schools prepare high school students for careers, based on the following principles:

- Academic instruction should be integrated with occupational education.
- Vocational skill training should be offered.
- Work-based education should be coordinated with classroom-based instruction.
- Programs and courses should be interconnected, both within and across the secondary and postsecondary levels.
- Applied teaching and team teaching should be used.

This federal initiative – which was designed to terminate after five years, but which continues on a scaled-down basis – has had considerable influence on program and curriculum design at the high school and community college levels. Its most significant elements are the call for academic instruction to be integrated with vocational programs; the suggestion that curriculum be structured sequentially or at least articulated (including between high school and college); and the recommendation that applied, or contextual, teaching be used.

High Schools That Work

High Schools That Work (HSTW), an Atlanta-based program created by the Southern Regional Education Board (SREB) in 1987, has emerged as a promising initiative with documented results. The program consists of a set of policies, practices and curricula that include and connect all facets of the high school program.[7] HSTW is being implemented now in more than 1,000 schools in 23 states.

HSTW goals include raising achievement levels in college-prep courses to at or above the national average and blending college-prep programs with high-quality CTE programs. In HSTW schools, all students are required to take a minimum core of courses, including CTE and General Studies. Instead of taking four credits in an academic major, CTE students take four credits in a CTE major.

The HSTW program has shown solid results, in both urban and rural schools, based on improved student performance on the National Assessment of Educational Progress (NAEP) tests. According to SREB, more students are taking higher-level and college-prep courses and scoring higher in math, reading and science. In addition, attendance and graduation rates are increasing, while dropout and disciplinary referral rates are declining.[8]

Although HSTW requirements call for preparing all high school students for entry to college, the program does not seem to be strong in terms of creating connective strategies between high schools and colleges. The lack of emphasis on these connections probably has a marginal negative impact on college-going rates, and the program could be strengthened considerably if such strategies were emphasized more.

Tech Prep

Tech Prep was born in 1985 with the publication of Dale Parnell's *The Neglected Majority*, which contended that the General Studies curriculum in high schools was ineffective and presented a dead end for students. Parnell concluded that the solution was to eliminate General Studies and replace it with four-year articulated curricula – the first half of which would be the junior and senior years of high school, and the second half of which would be the freshman and sophomore years at a community college. In Parnell's proposal, required high school courses were to be applied but rigorous; students would be provided the skills they need to succeed both in college and in the workforce.

Over the years, Tech Prep has evolved to where it now has several features that are similar to the HSTW program. It continues, however, to emphasize connectivity between high schools and colleges through articulated and sequenced curriculum building and also places a stronger emphasis on applied learning.

Tech Prep has come to be known as a "new system" that includes formal articulation strategies, engaged learning, outcomes-focused curriculum, involvement of all students, collaboration at all levels, innovative teaching strategies and proposed policies designed to support the system.[9]

Tech Prep was launched nationwide with the passage of the 1990 Carl D. Perkins Vocational and Applied Technology Act amendments, which provided funding for implementing Tech Prep education in schools and community colleges. By 1995, Tech Prep existed in some form in nearly 70% of the nation's school districts, serving more than 88% of all high school students. In the 1998 reauthorization of the Carl D. Perkins Act, the concept of Tech Prep was expanded to include articulated "two-plus-four" programs leading to a baccalaureate degree.[10]

CORD, a Texas-based group formerly known as the Council for Occupational Research and Development, serves as the resource and leadership center for Tech Prep. Research on the effectiveness of Tech Prep has been limited; what the little that has been done shows impressive results.[11]

Career Academies

Career Academies are learning communities within high schools that prepare students for both college and career. Participating students stay together as a group through two, three or four years, and study under the same teachers, who are drawn from various specialty areas. The curriculum includes college-prep courses but the experience is built around a career theme, such as health sciences, finance or information technology.

The first Career Academy was started in Philadelphia in 1969. Since then, there has been a substantial increase in interest and enrollment, with several thousand high schools across the nation now offering Career Academies. They are supported in a variety of ways, with one model being a foundation created by the business community. One such foundation is the National Academy Foundation, which sponsors

394 Career Academies in 38 states and the District of Columbia. More than 30,000 students are enrolled in its programs.[12]

Various evaluations of Career Academies have shown improved attendance, grades and graduation rates for participating students. Approximately 65% of the students enrolled in academies are classified as "at risk," yet more than 80% of them are admitted to either a community college or university after graduation. Career Academies thus have an excellent record as a pathway that high school students can follow to attend college.[13]

Middle College High Schools

A Middle College High School (MCHS) is a high school that is located on a community college or university campus with a mission of serving students who have encountered or are likely to encounter difficulties in traditional high schools.[14]

The MCHS concept is based on the assumption that the atmosphere, role models and high level of support available on a college campus provide a better learning environment for at-risk students. Studies have shown that a larger proportion of these students graduate from high school, enroll in college or enter the job market than similar students enrolled in the traditional high school.[15]

The City University of New York's LaGuardia Community College established the first Middle College High School in 1974. Currently, over 3,000 students in 10 states attend a Middle College High School on 25 community college campuses. According to research done on the LaGuardia campus, 94% of students who enter the program in the 9th grade go on to graduate, while 90% go on to attend college.[16]

Dual-Credit Programs

Dual-credit programs (DCPs) provide the opportunity for high school juniors or seniors who have completed a large number of their required courses to enroll in college-level courses. Most DCPs represent partnerships between high schools and community colleges.

A student enrolling in a DCP course receives credit at both the high school and the college. Courses can be conducted at either the high school or college and are taught by teachers certified to teach high school students. The DCP has the potential of compressing the time required to obtain a baccalaureate degree by up to two years. (In Utah, the governor has established a goal that every student graduating from high school also will have earned an associate degree. This means that students would be eligible to enter a university as juniors upon graduating from high school. Should a goal like this be accomplished, the implications for higher education would be enormous.)

The largest dual-credit program is Syracuse University's Project Advance, which serves approximately 4,000 students in five states. Started in 1972, Project Advance allows qualified high school teachers to preside over classes with a college-level curriculum. According to research conducted by Syracuse University, 93% of students who graduated from the program maintained a B average or better through four years of college. Also, 68% of Project Advance graduates said they planned to attend graduate school.[17]

In recent years, DCPs increasingly have been used as a tool to motivate below-average students – including dropouts – to take another look at education. It allows such students to engage in learning in a different, more mature environment and appears to work well for some of the students.[18]

Dual-credit programs work best in states where both the college and high school receive full state funding for DCP students. This policy removes much of the resistance to the program by high school teachers who fear losing both enrollment and state aid.[19]

A Local Solution: Montgomery County, Maryland

Innovative solutions to problems are sometimes found outside the more structured and funded programs. That is what occurred in Montgomery County, Maryland, in 1994. Each year, Montgomery College, a community college, enrolls approximately 25% of the graduating classes from the public high schools in

the county. In implementing an assessment system for course placement, the college found that surprising numbers of the graduating students were unprepared for college-level course work.

After further research, it was determined that students generally used three pathways through high school on their way to college. The first led to college readiness for essentially everyone who followed it. These students completed mathematics through pre-calculus and participated in honors English classes. No student who followed this pathway needed remedial work.

Pathway Two students took intermediate algebra or trigonometry and nonhonors 12th-grade English. This pathway resulted in one-third of the students needing remedial work.

The third pathway led to remedial needs for virtually every student who followed it. These students completed mathematics through geometry and an English course that was below grade level.

The sharing of these findings paved the way for new approaches to ensuring college readiness for all students in Montgomery County, including development of a joint database and regular meetings between officials of the school district and the community college.[20]

A Program for the Gifted: Simon's Rock College of Bard

Simon's Rock College of Bard was started in 1964 as a two-year college for women and awarded not only the associate degree but the high school diploma, as well. Simon's Rock accomplished this by admitting gifted students who had completed the 10th grade and as a result, it became one of the earliest institutions to use a Dual-Credit Program.

In 1974, Simon's Rock eliminated the high school components from the associate degree curriculum and replaced them with a baccalaureate degree. The college continued, however, to admit gifted students who had completed the 10th grade.

Though the college's total enrollment is small, 150 students, and its potential for upscaling is probably limited, it has clearly demonstrated that viable alternatives are possible for the last two years of high school.[21]

Which Options Work?

The ***High Schools That Work*** program is a promising initiative that builds on high schools as they exist and focuses on making every facet of the high school program work more effectively. It doesn't call for a radical remake of anything but, rather, relies on upgrading and enriching the high school experience for all students.

One of the main predictors of success in college is the curriculum taken in high school.[22] Students who have taken rigorous courses in English, mathematics, science, social science and computer science have a high probability of succeeding in college. The HSTW program requires that students take a course pattern that meets or exceeds the entrance requirements for admission to most colleges and universities.

If HSTW is the answer, the issue then becomes one of scale. The number of participating schools – roughly 4% of all of the nation's high schools – is not sufficient to make the impact that is so badly needed. Perhaps the solution lies with statewide approaches to reform such as the one that Ohio has recently launched. The state has elected to use HSTW as the core program around which the state's school reform efforts will revolve. The state can then build the administrative structure necessary to ensure the program's success.[23]

The answer also could rest with some of the other reform initiatives. Though it lacks broad-scale research to document its results, the ***Tech Prep*** initiative has much to recommend it. While the program shares some features with HSTW, it also has some important differences, chiefly Tech Prep's more structured connectivity between community colleges and high schools through its sequential curriculum building and articulated programs. Tech Prep also places more emphasis on work-based learning.

While Tech Prep emphasizes contextual learning, it does not advocate watering down courses. Its premise is that all students can benefit from learning in context regardless of whether they are preparing

for college or work. Tech Prep also recommends that students enroll in a course pattern that would satisfy most college entrance requirements.

Another important factor is Tech Prep's present statutory connection with baccalaureate degree-level programs, which provides a powerful motivational force for students enrolled in Tech Prep programs to give consideration to earning a baccalaureate degree.

The ***Career Academy*** initiative provides elements of group learning and community building, which for many students translate into a more supportive environment for learning. There is a substantial amount of performance data available on students in Career Academies and they show that participating students enter colleges at a higher rate than the high school population at large.

The use of ***dual-credit programs*** seems to be a workable alternative to what amounts to unproductive time during the junior and senior years for some students. There are, however, important concerns. One concern is that for DCPs to be supportable by the schools, dual funding must be provided, as well as dual credit. This is politically tolerable as long as the scale of DCPs remains relatively small but as the scale increases, political voices questioning this policy likely will be raised.

DCPs also lack support from some members of the higher education community, with some universities declining to accept DCP courses for transfer. This creates uncertainties for students. Also, there can be issues involving facilities and transportation depending on how the program is structured.

Even with its real or potential problems, DCP has intriguing potential and will likely experience considerable expansion until it becomes more of a political issue or until the junior/senior year problem is solved in some other manner.

The ***Montgomery County*** experience is worth reporting because it shows how community colleges and school districts can forge partnerships, how collaboration can accomplish what one institution acting alone cannot, and how accurate information can be used to produce good results. What happened in Montgomery County is replicable in many areas and could be accomplished fairly easily.

It also should be noted that selected features of one or more of the above programs can be incorporated into another program. Dual-credit courses, for example, can be used in HSTW, Tech Prep, Career Academies and Middle College High Schools. In fact, some of the most extensive use of DCP courses occurs in Tech Prep programs.[24]

The Best Strategy Is To Blend Options

I believe that a blended program involving Tech Prep, Career Academies and dual-credit programs provides the best potential for improving high school and student performance. Under this arrangement, the Career Academy would become the architecture for the high school program. The curriculum would consist of both required and elective courses. Required courses would be taken by all students and most of them would be taught in a contextual mode. Elective courses would consist of three types: honors courses for high-achieving students, CTE courses for students who wish to prepare for work or enter a technical program at the postsecondary level, and general and career exploration courses to allow students to explore special interests and careers.

As much as possible, curriculum planning would be done on a grade 9-14 basis in order to facilitate articulation and college entrance. CTE courses would be designed to prepare students for entry into one or more technical programs at a community college or university, as well as provide a level of marketable skills to all students. These courses could be taken at each grade level or during the junior and senior years. If they are taken during the freshman and sophomore years, they should be general – almost exploratory in nature – in order to permit movement between academies up to the junior year. Honors courses would be designed to become the elective courses for high-achieving students, and could be offered as dual-credit courses. The intent would be to strengthen preparation for college and/or permit the student to accumulate college credit.

The Career Academy model was chosen as the architecture because it has a proven record of moving students into college successfully. It also has a proven record of exposing students to careers and

making them aware of the requirements for succeeding in the world of work. The contribution of Tech Prep would be primarily in the area of curriculum design. The Tech Prep program has proven strength in the area of building sequential curricula, using contextual learning and articulating/planning on a grade 9-14 basis. Dual-credit programs would be available for all students to use as an option during grades 11 and 12 when available elective courses failed to satisfy their needs.

The High Schools That Work program is not being used in this recommended model but it easily could have been. The CTE approach being recommended is essentially the same as being used in HSTW schools. This also is true for honors courses for higher-achieving students. A major difference between HSTW and Tech Prep is the emphasis of Tech Prep on contextual learning and on including grades 13 and 14 in curriculum planning and articulation.

Middle College High Schools are excellent programs for at-risk students, but their design limits their scalability. Where conditions permit, however, MCHS are an impressive solution and should be used when possible.

The Montgomery County example falls short of being an actual program, but it does point out that there are local creative solutions available if conditions are right and the right people are involved in the dialogue.

Administrative Considerations

Each state has some type of state board that administers or regulates its schools, with responsibility for establishing programs, setting standards and certifying teachers. Such boards are eminently capable of carrying out policy change to establish Career Academies as the principal architecture for high school programs in the state.

The real challenge comes in monitoring the connectivity between high schools and colleges. To accomplish this task, it is recommended that states create "Pathways Commissions" whose membership would consist of secondary, community college and university representatives and whose charge would be to recommend policies and actions to both the state board of education and the board or boards that provide coordination for postsecondary education. The commission would be primarily a leadership and visioning body. It would be created by the legislature but its members would be appointed by the respective boards. The commission would have the authority to propose legislation to address specific issues if the respective boards failed to respond to its recommendations.

In addition, there would be a need for providing funds to support professional development of teachers and curriculum development. Some funds are available through the Perkins Applied Technology Act, although not nearly enough to ensure that this type of change would be successful.

Conclusion

High school performance has improved, but there are still a number of areas in need of attention, including the preparation of students for college, the exposure of students to career options, more effective use of the senior year and more better curricula for General Studies and CTE students.

Of the programs reviewed in this paper, it was determined that a blend of Career Academies with Tech Prep and Dual-Credit Programs offers the best solution for improving pathways to college. This blended program would address most of the issues mentioned above and would be relatively simple to implement within each state.

It is intended that this blended-program model would accommodate all high school students and that the differences in student goals would be accommodated by the design of elective courses. At least some of the required courses would be taught contextually, and career exploration experiences would be available to satisfy some electives.

Finding solutions for making high schools more effective for all students is a journey that is well under way but still has a distance to go. Each passing month brings increased understanding and improved strategies. The key to continued improvement depends on applying these new discoveries in a timely manner.

Summary of Recommendations

Recommendation #1. **A blended program of Career Academies, Tech Prep and dual-credit programs should be adopted.** This program would have the following features:

- The Career Academy would serve as the principal architecture.
- The curriculum would include both required and elective courses, with the required courses being taken by all students.
- Most of the required courses would be taught in a contextual mode.
- Elective courses would be specially designed for (1) high-achieving students, (2) for students interested in pursuing a technical career and (3) for general interest and career exploration.
- Curriculum planning would be done on a grade 9-14 basis.
- CTE elective courses would be designed to prepare students for entry into technical programs, as well as provide students with marketable skills.
- Honors courses would be used as elective courses for high-achieving students.

Recommendation #2: **Middle College High Schools are excellent programs for at-risk students and should be created wherever conditions permit their use.**

Recommendation #3: **Programs that support creative, collaborative solutions at the local level should be enacted and funded.**

Recommendation #4: **A Pathways Commission should be created in each state to monitor and provide leadership on strategies and policies for improving the connectivity between high schools and colleges.**

Glossary of Terms

Applied Teaching – The term "applied" should be treated as synonymous with "contextual." Teachers use examples from the real world and steps are taken to relate theory to practice.

Career and Technical Education – This phrase is being used to cover and replace the phrases "vocational education," "career exploration" and "technical education."

Contextual Learning – See "Applied Teaching" above.

Occupational Education – This phrase is associated with postsecondary technical and vocational programs. It is a broad phrase that applies to all postsecondary programs below the baccalaureate level that prepare students for entry into work.

Work-based Education – This phrase is used to cover those learning activities that are based at a work site. Examples include cooperative education, apprenticeship programs and work-study arrangements. Work-based education is a core principle of the School-to-Work Program.

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